



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/442,353	11/17/1999	HIRONORI KIKKAWA	NEM-01701	5715

26339 7590 11/25/2002

PATENT GROUP  
CHOATE, HALL & STEWART  
EXCHANGE PLACE, 53 STATE STREET  
BOSTON, MA 02109

EXAMINER

NGO, HUYEN LE

ART UNIT PAPER NUMBER

2871

DATE MAILED: 11/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/442,353

Applicant(s)

KIKKAWA ET AL.

Examiner

Julie-Huyen L. Ngo

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-6,8,9,12-14,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8,9,12-14,25 and 26 is/are rejected.
- 7) ☒ Claim(s) 1,2,5,6,8,9 and 12-14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 November 1999 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION*****Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 22, 2002 has been entered.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. ✓

The abstract of the disclosure is objected to because it not clearly states which is new in the art to which the invention pertains. Correction is required. See MPEP § 608.01(b) ✓

***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "***one rough*** portion formed below the reflective film," recited in claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. ✓

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

Claims 1, 2, 5, 6, 8, 9 and 12-14 are objected to because of the following informalities:

Claim 1 is objected to because it appears that \_ a material constituting \_ \_ ✓  
should be inserted after "a same material" on line 6.

Claim 2 is objected to because it appears that "said gate electrode," in line 3, ✓  
should be \_ \_ a gate electrode \_ \_ since this is a first introduction of said electrode.

Claim 5 is (repeated for Applicant's attention) objected to because according to ✓  
the description in the specification (p. 11, lines 10-15) and figure 2, the light-shielding layer is disposed on an area of ONLY ONE switching element.

Claim 6 is objected to because "said thin film transistor comprises" should be ✓  
deleted since this is a repetition of the limitation recited in claim 1, also "a gate electrode" should be \_ \_ *said gate electrode* \_ \_.

Claims not specifically mentioned above are objected to as bearing the defect(s)  
of the claim(s) from which they depend.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Art Unit: 2871

Claims 8, 9, 25 and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. ✓

Claim 8 is (repeated for Applicant's attention) rejected to because the recitation calling for the reflective layer formed of at least one of aluminum and an aluminum alloy (as amended in paper no. 13) was not described in the specification as originally filed. Also, the recitation calling for a broader scope of invention, which can be construed that the reflective layer is formed of a different material other than an aluminum or an aluminum alloy. According to the specification (page 5, lines 19-20), the reflective layer is ONLY formed of either aluminum or an aluminum alloy.

Claim 9 is rejected to as bearing the defects of claim 8 from which it depends.

In claims 25 and 26, it is unclear which switching element Applicant is referred to as "said switching element," recited in lines 4-7 since "a plurality of switching elements" has been recited in line 3. Further more, the recitation calling for "a reflective layer constituted of a same material as a material constituting said switching elements," in lines 4-5, is unclear of which element of which switching elements is the reflective layer supposed to have the same material with. However, this recitation constitutes new subject matter since the disclosure, as original filed and shown in figures 1 and 2, only disclosed that the reflective layer is constituted of a same material as the material of ONLY the gate electrode of each switching element. ✓

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4-6, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. (US 6,118,505) in view of Ukita et al. (US 5,940,154).

Nagata discloses, in figs. 2 and 4, a Liquid Crystal Device comprising all the limitations recited in claims 1, 2, 4-6, 8 and 12 except for:

(Claims 1, 25 and 26) a reflective layer constituted of a same material of an electrode/gate electrode of a plurality of switching elements, and simultaneously formed during formation of said electrode or the gate electrode on a same plane as a plane of said electrode or gate electrode.

(Claims 12, 25 and 26) at least a rough portion is formed below a reflective layer, and said reflective layer is formed to cover said at least one rough portion.

Ukita et al teach (col. 10, line 55 to col. 11, line 21 and figure 5) forming at least one rough portion below a reflective layer<sup>2</sup>, which made of aluminum or an aluminum alloy reflective layer, and under a pixel electrode<sup>5</sup> for reflecting light through a pixel region. Doing so would significantly reduce light from entering the Thin Film Transistor (20)'s semiconductor layer (7), which would not decrease in an off-resistance.

Accordingly the leakage current would decrease and no deterioration in display grade would occur.

Art Unit: 2871

Therefore, it would have been obvious to one of ordinary skilled in the art to form at least one rough portion on the substrate (1) in the device of Nagata et al., and then form a reflective layer over the rough portions for reducing light from entering the Nagata et al.'s thin film transistor (7) and for the reasons as set forth above, as taught by Ukita et al.

Furthermore, (claim 2) since both Nagata et al. thin film transistor (7)'s gate electrode (2) and Ukita et al device's reflective layer (2) are formed of a metal material and are formed on a same substrate, it would have been obvious for one of ordinary skilled in the art to simultaneously form the reflective layer during the formation of the gate electrode and on a same plane as the plane of the gate electrode, i.e. the substrate (1), for reducing manufacturing steps, ensuring lower fabrication cost and increasing fabrication yield.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. in view of Ukita et al. as applied to claims 1 and 8 above, and further in view of Seiki et al (US 5,811,835).

It is well known in the art for gate electrodes to compose of a low-resistance metal, such as aluminum (Al), coated with chromium (Cr), tungsten (W), titanium (Ti), tantalum (Ta), or some other metal whose melting point is higher than that of aluminum such as neodymium or with an aluminum alloy so that a hillock, blister, etc. of aluminum can be effectively prevented, as evidenced by Seiki et al (col. 1, lines 25-32 and col. 3, lines 30-40).

Art Unit: 2871

Therefore, it would have been obvious to one of ordinary skilled in the art to form the reflective layer and the gate electrode in the device of Nagata and Ukita et al. from an alloy of aluminum and neodymium for the reasons set forth above, as taught by Seiki et al.

Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagata et al. in view of Ukita et al. as applied to claim 1 above, and further in view of Kimura (US 5,610,741).

Kimura teaches (figures 13&14 and col. 15, line 61 to col.16, line 36) patterning a photo resist film or insulation film to form rough portion(s) on a surface of a substrate and below a reflective layer (col. 16, lines 63-67) for effectively reflecting light. Also, it is well known in the art to form a photo resist film of a material, which is not deformed in a heating process performed later and which does not contain high density impurities adversely affecting a liquid crystal display.

Therefore, it would have been obvious to one of ordinary skill in the art to pattern rough portion(s) below the reflective layer (2), in the device of Nagata et al. in view of Ukita et al., from a photoresist film or an insulation film for the reasons set forth above, as taught by Kimura.

### ***Response to Arguments***

Applicant's arguments filed on May 14, 2002 (paper no. 17) have been fully considered but they are not persuasive.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically



Art Unit: 2871

pointing out how the language of the claims patentably distinguishes them from the references.

More over, Applicant's arguments were against the references individually. Applicant is to note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The rejection as set forth above are based on combinations of references as follow:

The Ukita et al reference is relied on for its motivation to form at least one rough portion below a reflective layer in the device of Nagata et al. as set forth above in the rejection of claims 12, 25 and 26.

The Seiki et al's teaching is used to form the reflective layer and the gate electrode in the device of Nagata et al. in view of Ukita et al from an alloy of aluminum and neodymium for the motivations as set forth above in the rejection of claim 9.

Furthermore, Kimura's teaching is used to pattern rough portions formed of a photoresist film or an insulation layer below the reflective layer in the device of Nagata et al. in view of Ukita et al. for the motivation as set forth above in the rejection of claims 13 and 14.

Therefore, the cited references as combined by their motivations fully meet all the limitations recited in the claims.

Art Unit: 2871

***Contact Information***

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Julie Ngo, whose telephone number is (703) 305-3508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read "Julie Nguyen L. Ngo", with a long, sweeping horizontal line extending to the right.

*Julie Nguyen L. Ngo*

**Patent Examiner  
Art Unit 2871**

November 15, 2002